

REMARKS

This submission is in response to the Final Office Action dated August 12, 2003. Reconsideration of the above identified application, in view of the above amendments and the following remarks, is respectfully requested.

Claims 1-10 and 12 are currently pending.

The Examiner has objected to Fig. 19, which was added in the last amendment, as introducing new matter. Applicants respectfully cancel Fig. 19 and request that this figure not be entered. The Examiner has also objected to the drawings on the basis that a notch is shown and that the rubber material of the gasket is not shown properly in cross-section. The recitation of a notch has been eliminated from the claims and Figs. 1, 2 and 5-14 have been amended to properly show the rubber material of the gasket. In view of the proposed amendments, this objection should be withdrawn.

Claims 1, 3-10, and 12 stand rejected under 35 U.S.C. 112, second paragraph. Applicants have amended claims 1, 9 and 12 to provide proper antecedent basis for the claim elements. With respect to the discussion of the use of "means for" language, this rejection is now moot since the recitation of a "fitting means" has been eliminated from the claim. Applicants have replaced this term with the term "coupling feature". Based on the present amendments, this ground of rejection should be withdrawn.

Claims 2 and 12 (it is believed that the Examiner meant claim 1 instead of claim 2) stand rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer et al. in view of Poltorak.

The sealing element of the present invention is a "one-directional seal." That is to say, the seal is so characterized in that, as interior of the sealed portion of a vessel would become high in pressure, inner fluid (gas or air) can easily be released to outside, while exterior side of the sealed portion would become high in pressure, the exterior gas is prevented from entering into the vessel

through the sealing (Cf. explanation in the specification related to Fig. 8). Hence, as the container with the sealing element of the present invention is applied for the container for accommodating semiconductor wafers, it is effective to prevent contamination from exterior environment. Meanwhile, when the container door is closed, since internal pressure is easily released through the sealing element, a large force is not required (if a large force would be required when the door would be closed, the apparatus tends to become larger in size).

Therefore, in the sealing element of the present invention, sealing is made by contact with the curved portion of the protruding part 22, thus to establish the one-directional seal. Furthermore, when the curved portion which is annularly configured would have a contact with the door element to establish sealing, it is necessary that the sealing element should attain a uniform contact with the door element. However, if tip of the protruding part 22 would be formed too sharp, chances are the tip might not be achieved. Hence, the sealing element of the present invention may have a rounded projection at the distal end (tip) of the protruding part 22.

Claim 1 has been amended to recite these features and to recite the cooperation of the protruding part with the fitted element and the fitting element.

On the other hand, Meyer et al. as well as Poltorak both disclose a "two-directional seal." That is to say, the sealing is performed separately in exterior and in interior, which does not have a feature of releasing high pressure gas in interior side of vessel to exterior side. In respect, Meyer et al. disclose a double-directional gasket whose tip (distal end) is utilized for sealing, so that sealing is maintained when either side is subjected to higher pressure. Similarly to the above, Poltorak also discloses a two-directional seal which can maintain sealing when either side of a vessel is subjected to higher pressure by means of bulbous portion at the vertical leg of bifurcated gasket. Here, the provision of the bulbous portion does not seem to be for the purpose of preventing wavy deformation of the gasket, but to retain sufficient contact (sealing) area (by enlarging disposing area of the sealing element).

Consequently, the present invention is not a mere combination of configurations of the references cited. That is to say, while the cited references disclose double-directional gaskets which utilize tips of the gaskets for the double-directional sealing purpose, the sealing element of the present invention is of the one-directional seal. Therefore, there should be no motivation for a person skilled in the art to arrive at the claimed sealing element by considering any of the references cited.

Moreover and in other words, Meyer discloses a gasket for water-tightly sealing hatches, etc., on ships, which is quite different from a hermetic sealing means for a hermetic container such as a container for shipment of semiconductor wafers as in the present invention. Meyer, in the drawings, illustrates sealing members (gasket) which is so configured that the gasket is formed in the same thickness (strip portion 19) from the proximal part to near the distal end (tip 18) which is configured in an arrowhead-shaped protrusion (15).

Furthermore, the arrowhead-shaped protrusion (15) is provided with generally flat surfaces 16 and 17. On the sealing operation, the flat surface (17) of the arrowhead portion (15) makes press-surface-contact on a leg portion of L-shaped portion (9), consequently, the strip portion (19) buckles like a toggle so as to urge the corner of the L-shaped portion (9) with the arrowhead portion (15), whereby the anticipated sealing is established.

Meanwhile, if direction of an external pressure might be charged, the strip portion (19) would deform in conformity with the direction of the external pressure so that the other flat surface 16 would make the press-surface-contact on the other leg portion of the L-shaped portion (9) so as to establish sealing. In this manner, in Meyer, two directional sealing can be established. On the other hand, in the present invention, if internal pressure of the hermetic container were to be increased, the internal atmosphere might be allowed to be released to outside to a certain extent; however, if external pressure were to be increased, exterior atmosphere could be prevented from entering into the container, which creating one-directional sealing. Accordingly, the purpose of the gasket in Meyer is quite different from the purpose of the present invention.

Accordingly, claim 1 has been amended to specifically state that sealing is made by contact with the curved portion of the protruding part. For the above reasons, this type of sealing is in contrast to the type that is disclosed in the cited references.

Based on the present amendment and foregoing comments, Applicants respectfully request reconsideration and allowance of amended claim 1.

Claim 12 should be allowed as depending from what should be an allowed independent claim 1.

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art applied to claim 1 and further in view of Poltorak and Semon. Claim 3 should be allowed as depending from what should be an allowed independent claim 1 since these secondary references fail to cure the deficiencies of the primary reference.

Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art applied to claim 3 and further in view of Ryan. Claim 7 should be allowed as depending from what should be an allowed independent claim 1 since the secondary reference fails to cure the deficiencies of the primary reference.

Claim 5 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art applied to claim 1 and further in view of Ryan. Claim 5 should be allowed as depending from what should be an allowed independent claim 1 since the secondary reference fails to cure the deficiencies of the primary reference.

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art applied to claim 12 and further in view of Ryan. Claim 6 should be allowed as depending from what should be an allowed independent claim 1 since the secondary reference fails to cure the deficiencies of the primary reference.

Claim 4 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art applied to claim 12 and further in view of Poltorak and Semon. Claim 4 should be allowed as depending from what should be an allowed independent claim 1 since the secondary references fail to cure the deficiencies of the primary reference.

Claim 8 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art applied to claim 4 and further in view of Ryan. Claim 8 should be allowed as depending from what should be an allowed independent claim 1 since the secondary reference fails to cure the deficiencies of the primary reference.

Claims 9 and 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Krampotich et al. in view of Meyer.

Claim 9 has been amended to recite that the container body includes a number of positioning grooves located on an underside of the container body for mating with a support plate. In addition, claim 9 has been amended to recite that the protruding part is formed in a tapered configuration which becomes gradually narrower from the proximal part toward the distal end. Applicants respectfully submit that neither of these added features is present or suggested in either of the cited references and therefore, this rejection should be withdrawn.

As described above and set forth in amended claim 9, the protruding part of the present invention is so formed as a tapered configuration which becomes gradually narrower from the proximal part toward the distal end, protrudes obliquely outwards and toward the open front of the container body. In the sealing process, the middle portion of the protruding part makes contact with the open front of the container body so as to make the protruding part elastically deformed outward the open front. Accordingly, as the internal pressure of the container body is increased, internal atmosphere is allowed to leak out, while the external pressure of the container body is increased, external atmosphere is prevented from entering into the container body, whereby creating the one-directional sealing.

Krampotich discloses a seal (26) which has a greater dimension portion (150) in a radial direction and a lesser dimension portion (151) perpendicular to the greater dimension portion (150) and in an axial direction (A1) which is the direction along which a door (24) is applied to an enclosure portion (22). The lesser dimension portion (151) of the seal (26) is set into a radially inset groove (74) of the door (24), from where the greater dimension portion (150) extends outward, whereby sealing is established by protruding sealing sections 96 and 98 which protrude in axial direction (A1) from the greater dimension portion (150).

On the other hand, in the present invention, the endless portion of the sealing element is tilted onto a fit-holding groove, from where a protruding part with a tapered configuration is projected obliquely and outwardly with respect to the open front of container body so as to form a substantially acute angle between the protruding part and contact surface to establish sealing, as illustrated in Fig. 8 of the present invention. Hence, the configuration of the sealing element of the present invention is quite different from Krampotich wherein the contact surface and protruding sealing sections are abutted perpendicularly so as to establish sealing.

Consequently, Krampotich in view of Meyer does neither discloses nor suggests the feature of the subject matter set forth in claim 9.

On this basis, reconsideration and allowance of claim 9 are in order.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated:

Respectfully submitted

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Attachments